

## **Inquiry into Business-University Collaboration by the House of Commons Select Committee on Business, Innovation & Skills**

### **Evidence from the Russell Group**

#### **Summary**

- The UK's comparative advantage in business-university collaboration derives from excellent research within our world-class universities and their strong links with business.
- The strength of our research base enables the UK to attract high levels of inward investment and the best international researchers to locate within our centres of excellence, underpinning innovative business and research clusters.
- Sustained public investment for R&D, innovation and capital for research conducted by our world-class universities is essential in order to reap economic and social rewards and to enable the UK to retain its comparative advantage. The ongoing flat cash settlement for research means the UK is standing still while our competitors forge ahead.
- The UK needs to create the right environment for new ideas to develop and grow into commercial success. The Government should continue to support universities' efforts to build strong links with business and public services and to establish their own spin-outs and other commercial activities. The availability of proof of concept funding and financial and tax support for early stage ventures from universities should be enhanced.
- The Higher Education Innovation Fund (HEIF) is extremely effective in developing knowledge-based interactions between universities and businesses, and facilitating innovation which results in economic and social benefit to the UK. HEIF and equivalents in the Devolved Administrations must be maintained and targeted to support research-intensive universities where they can have most effect. Similarly, on-going support for Institutional Impact Acceleration Accounts from the Research Councils should be given a high priority.
- We recognise that SMEs are vital to the future growth of the UK economy. However, there is a danger that the allocation of HEIF in the manner recommended by Sir Andrew Witty could serve to skew knowledge exchange interactions too much towards purely SME-university collaboration. This would ignore the importance of engaging with larger companies with greater capacity to drive regional and national economic growth. Enabling universities to engage with SMEs through the supply and value chains of large businesses should be a key consideration.
- Research excellence must be at the heart of the Catapults. They should be engaged directly with the UK's excellent research-intensive universities, enabling them to build on areas of existing strength and comparative advantage. We are concerned that the value of Catapults will be undermined if

engagement with the research base and academic networks within our world-leading universities is not at the core of their remit.

- In order to improve the uptake of Knowledge Transfer Partnerships (KTPs), local enterprise partnerships (LEPs – and Enterprise Agencies in the Devolved Administrations) could be major contributors to KTP funding, raising awareness with the SME community in particular, and helping to boost the number of partnerships that can be supported each year in their regions. The University Enterprise Zone pilots could also be extended more widely with additional funding and the successful Research Partnership Investment Fund should be developed further as a long-term strategic initiative.
- Assessment of ‘impact’ must be explicitly linked to research activity and research excellence. Increasing the weighting of the impact criteria in any future REF could create perverse incentives which discourage fundamental research of a novel and high-risk nature which pays economic and social dividends over the long-term. Any changes that may be made to the research assessment process in future must have the full confidence of the HE sector and other stakeholders.
- It is imperative universities sit at the core of regional growth strategies along with businesses, enabling world-leading research to be harnessed and brought to commercialisation. In order to deliver significant regional economic growth, LEPs must focus investment on existing centres of excellence at the UK’s world-class universities, enabling current knowledge transfer, commercialisation and development activities to be scaled up.

## 1. Introduction

- 1.1 The purpose of The Russell Group is to provide strategic direction, policy development and communications for 24 major research-intensive universities in the UK; we aim to ensure that policy development in a wide range of issues relating to higher education is underpinned by a robust evidence base and a commitment to civic responsibility, improving life chances, raising aspirations and contributing to economic prosperity and innovation.
- 1.2 We welcome the opportunity to provide evidence to the Committee’s inquiry into business-university collaboration. The Russell Group is well-placed to respond as our universities engage extensively with the full spectrum of businesses, from SMEs to multinationals, charities and other organisations. They help to drive current and future economic prosperity by undertaking a range of activities, from basic research to applied R&D, knowledge exchange, business incubation and entrepreneurial opportunities.
- 1.3 See **Annex A** for a selection of case examples demonstrating how Russell Group universities work with businesses to drive economic growth.
- 1.4 Our universities contribute out of all proportion to their size on key economic measures, and are highly effective and successful in the commercial exploitation of their research. In 2012-13, Russell Group universities accounted for:

- 76% of the total income from contract research to UK universities (and made up 83% of those universities with contract research with commercial businesses worth more than £5 million)
- 60% of the total income from collaborative research involving both public funding and funding from businesses to UK universities
- 63% of the intellectual property income generated by UK universities
- 62% of active spin-outs which survived for three years<sup>1</sup>

1.5 Spin-outs and start-ups associated with Russell Group universities and their academics and graduates are also creating a significant number of jobs, employing 9,769 full time equivalent staff in 2012-13.<sup>2</sup>

## **2. Our world-class universities are the key strength of the UK's innovation system**

2.1 The World Economic Forum consistently ranks the UK as among the best in the world for business-university collaboration on R&D.<sup>3</sup>

**2.2 The UK's comparative advantage in business-university collaboration derives from excellent research within our world-class universities and their strong links with business.**

2.3 The UK's universities lead the world in producing excellent research:

- Whilst the UK represents 4% of researchers globally, we produce 16% of the world's most highly-cited articles and rank first in the world by field-weighted citation impact.<sup>4</sup>

2.4 Russell Group universities, in particular, produce an extremely high level of world-leading research: 67% of world-leading research originating from all UK universities.<sup>5</sup>

2.5 Long-term curiosity-driven research undertaken at our universities often delivers significant economic and societal benefits: it endows businesses with competitive advantage, brings new consumer products to market, creates numerous job opportunities, as well as providing better health care, cleaner and more efficient energy sources, improvements to 'quality of life' and much wider cultural benefits.<sup>6</sup>

2.6 The concentration of highly skilled and talented researchers, in particular at Russell Group universities<sup>7</sup>, coupled with cutting-edge facilities and resources, plays a significant role in attracting international R&D investment to the UK from research-intensive businesses.

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<sup>1</sup> Higher Education – Business and Community Interaction (HE-BCI) survey data 2012-13

<sup>2</sup> Ibid

<sup>3</sup> World Economic Forum, 'The Global Competitiveness Report: 2013–2014'

<sup>4</sup> 'International Comparative Performance of the UK Research Base – 2013: A report prepared by Elsevier for BIS'

<sup>5</sup> Research Assessment Exercise 2008 (for the 24 universities that are now Russell Group members)

<sup>6</sup> See our publications outlining the significant economic and social impacts of research conducted at Russell Group universities: [http://www.russellgroup.ac.uk/uploads/RG\\_ImpactOfResearch2.pdf](http://www.russellgroup.ac.uk/uploads/RG_ImpactOfResearch2.pdf)  
<http://russellgroup.org/SocialImpactOfResearch.pdf>

<sup>7</sup> Over a third of academic staff employed at Russell Group universities are from outside the UK compared to a sector average of 25%. HESA 2012-13

- 2.7 A further comparative advantage for the UK's innovation system is derived from high quality research-led teaching in our world-class universities. The training of skilled graduates is one of the principal benefits of research – facilitating transfer of a knowledge base informed by the latest scientific developments and techniques, a capacity for creative thinking and ability to solve complex problems.<sup>8</sup>
- 2.8 **The strength of our research base enables the UK to attract high levels of inward investment and the best international researchers to locate within our centres of excellence, underpinning innovative business and research clusters.**

### **3. The need for sustained public support for R&D and innovation**

- 3.1 The UK's universities have substantially increased their role in undertaking R&D in recent decades, with R&D performed by UK universities increasing in value by £3.3 billion (86%) in real terms between 1995 and 2011. UK universities also undertake a greater proportion of total R&D than in competitor countries.<sup>9</sup>
- 3.2 As outlined above, the UK's world-class universities are also vital to attracting high levels of foreign investment to the UK's R&D and innovation system. Between 2000 and 2011, the most consistent growth in overseas-financed R&D has been in the HE sector: with an average annual increase of nearly 9% over the period.<sup>10</sup>
- 3.3 However, public and private R&D expenditure in the UK is low compared to international competitors:
- i. R&D expenditure as a percentage of GDP declined in 2012 (from 1.77% in 2011 to 1.72%) – with decreases in both business and government investment.
  - ii. This is well below the EU-28 provisional estimate of 2.06% and investment by the US of 2.8% in 2011.
- 3.4 There is clear evidence that business investment in R&D is correlated with public investment and is dependent on sustained public funding.<sup>11</sup> In order to boost business funded R&D, government should consider increasing its own investment.
- 3.5 We welcome the continuation of dual support and ring-fencing of the science and research resource budget. However, the on-going essentially flat cash settlement (even with some small increases announced in the last Autumn Statement and Budget) has meant the value of the science and research budget has significantly

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<sup>8</sup> See our publication outlining the student experience at Russell Group universities, including the benefits of a research-led teaching approach:

<http://www.russellgroup.org/StudentExperienceatRussellGroupuniversities.pdf>

<sup>9</sup> In 2011, UK universities contributed around 27% of total R&D undertaken in the UK, compared to an average of 19% across the OECD area as a whole: National Audit Office, 'Research and Development funding for science and technology in the UK: Memorandum for the House of Commons Science and Technology Committee' (June 2013)

<sup>10</sup> BIS, 'Innovation Report 2014: Innovation, Research And Growth'

<sup>11</sup> Analysis of OECD data shows a marked correlation between government financed and private sector financed R&D in the UK and across 22 other countries. BIS, 'Insights from international benchmarking of the UK science and innovation system: A report by Tera Allas' (2014)

declined in real terms since 2009-10 (it will be worth between £420 million and £560 million less in 2015-16 than would have been delivered with indexing to inflation).<sup>12</sup>

- 3.6 World-class infrastructure, particularly buildings and equipment, is needed to facilitate the very best environment for research and teaching and engagement with business. Capital funding, particularly for research, has been under pressure following Government cuts in previous years making it increasingly difficult for our institutions to compete with better-resourced institutions internationally.
- 3.7 The Research Partnership Investment Fund for capital co-investment in university research facilities is a step in the right direction and we would recommend that this be turned into a longer-term, more strategic initiative for the future. We welcome the ambition to leverage private sector investment– but this must be in addition to Government funding and not a replacement for it.
- 3.8 The Government has now committed to increasing funding for capital investment and maintaining this at around £1.1 billion in real terms to 2020-21, which is very welcome. We encourage the next Government to maintain this commitment, and in addition for it to make a commitment to support the on-going resource costs associated with operating, maintaining and up-grading capital facilities.
- 3.9 As noted in a recent BIS report, public sector investment to facilitate innovation and business-university collaboration is low compared to international competitors.<sup>13</sup> For example, whilst the Technology Strategy Board (TSB) has an annual budget of £440 million, a number of other European countries provide higher levels of investment into publicly funded innovation initiatives. For example:
  - The annual budget of Germany’s network of 67 Fraunhofer Institutes is £1.7 billion (€2 billion).
  - France’s network of 34 Carnot Institutes are funded by a public endowment of £1 billion (€1.3 billion) and the network of 71 Innovation Clusters were awarded £2.2 billion (€2.7 billion) between 2008 and 2012 in state funding, with a renewed commitment to internationalise the network from the French government in 2013.<sup>14</sup>
  - The annual budget of Finland’s national innovation agency, TEKES, is £480 million (€577 million). (This represents £89 of public investment into innovation per capita compared to £7 in the UK).
- 3.10 **If the UK’s investment in research and development, innovation and capital funding continues to remain static whilst our international competitors increasingly focus on investing to enhance their capability, we will find it ever harder to compete effectively in the global race.**<sup>15</sup>

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<sup>12</sup> The range depends on which measure of inflation is used: GDP deflator or CPI.

<sup>13</sup> BIS, ‘Insights from international benchmarking of the UK science and innovation system: A report by Tera Allas’ (2014)

<sup>14</sup> The Carnot Institutes are a network of public research institutions dedicated to conducting partnership research for companies, promoting innovation and developing technology transfer. The Innovation Clusters are collaborations of companies, public HEIs and research laboratories focusing on market-oriented projects and prototypes.

<sup>15</sup> See our publication ‘Jewels in the crown’ which outlines the challenges faced by the UK HE system, including under-investment compared to international competitors:  
<http://russellgroup.org/JewelsInTheCrown.pdf>

- 3.11 **Sustained public investment into R&D, innovation and capital for research conducted by our world-class universities is essential in order to reap economic and social rewards and to enable the UK to retain its comparative advantage.**

#### 4. The effectiveness of current public support mechanisms

- 4.1 Government initiatives currently support a wide array of activities leading to innovation and economic impact developed from universities' research and knowledge transfer activities. However, we believe more can be done to increase the effectiveness of these initiatives to leverage maximum impact from our universities' excellent research and innovation activities, as set out below:

##### *Proof of concept*

- 4.2 Significant gaps remain in the UK's funding pipeline to take a research idea through to a final product or service, including problems in accessing 'proof of concept' funds and sufficient venture capital (particularly compared to the US). It remains a real challenge in the UK to secure investment in new technologies.
- 4.3 Proof of concept and proof of market funding is available via the TSB's SMART scheme, but only SMEs are eligible to apply, which means universities cannot access this directly. The eligibility rules should be changed, allowing universities access to these funds to enable more good ideas to be developed for commercialisation or spin-out. The TSB also supports larger-scale demonstrators to test concepts (for example in low carbon vehicles, digital technologies and future cities), which universities can access. Availability of this type of funding should be increased to ensure the UK can develop and test ideas at the scales needed to compete globally.
- 4.4 We welcome the expansion of the TSB's Catalyst Fund, providing discipline-focused proof of concept funding in biomedical science, agricultural technology, energy and industrial biotechnology. Further Catalysts should be introduced in other fields to support both academically and commercially-led R&D through to commercialisation.
- 4.5 **The UK needs to create the right environment for new ideas to develop and grow into commercial success. The Government should continue to support universities' efforts to build strong links with business and public services and to establish their own spin-outs and other commercial activities. The availability of proof of concept funding and financial and tax support for early stage ventures from universities should be enhanced.**

##### *Higher Education Innovation Fund*

- 4.6 HEFCE funding for knowledge exchange through **the Higher Education Innovation Fund (HEIF) is extremely effective in developing knowledge-based interactions between universities and businesses, and facilitating innovation which results in economic and social benefit to the UK.** Critically, HEIF – and its equivalents in the Devolved Administrations— allows universities autonomy in deciding how and where to invest in solutions for best effect.
- 4.7 A recent independent report for HEFCE found that Government investment through HEIF 'is a critical part of the knowledge exchange funding landscape, allowing HEIs to

build the necessary capacity and capability to engage with external users'.<sup>16</sup> It calculated that HEIF funding results in a return on investment of more than six-fold and the return is greater where research intensity is greater:

- Over the period 2003-2012, the return on £1 of HEFCE knowledge exchange investment to the most research-intensive universities was £13.30 in gross additional knowledge exchange income, for other high research-intensive institutions it was £7.10.
- This drops to £4.80 and £2.60 for medium and low research intensive institutions respectively, and just £1.50 for specialist arts HEIs.<sup>17</sup>

4.8 We welcome the Government's continued support for the *de minimis* cut-off for HEIF funding allocations, in order to ensure that funding is performance based.<sup>18</sup> However, the £2.85 million allocation cap for any single institution means that universities who deliver most of the UK's excellent research are being constrained in their ability to translate research into innovation. Lifting the cap will target the limited resources through HEIF on those universities best able to translate world-class research and knowledge into even greater economic benefit to the UK.

4.9 We are supportive of Sir Andrew Witty's recommendation that HEIF should be increased to £250 million per year. Despite this, the Government has not made a clear commitment to maintain the current level of investment in HEIF, which is a matter of real concern. We recommend that **HEIF and equivalent instruments in the Devolved Administrations be maintained and targeted to support research-intensive universities where it can have most effect.**

4.10 In his Review of Universities and Growth, Sir Andrew Witty recommended that 'the method of determining institutions' [HEIF] allocations should be reviewed to sharpen the incentive to engage with innovative SMEs' and proposed that 'institutions' HEIF strategies show how all local SMEs that could benefit from working with an HEI are enabled to do so'.

4.11 We agree that universities should actively engage with SMEs. Indeed, Russell Group universities already engage extensively with innovation-led SMEs through a wide range of activities and provide effective routes for engagement such as single points of contact through Technology Transfer Offices. Many of our universities have also introduced schemes aimed exclusively at engaging SMEs in knowledge exchange, such as Innovation Voucher schemes. Russell Group Business schools, in particular, are extremely effective in supporting SMEs, providing accelerator facilities and advice for external emerging businesses as well as staff and graduate start-ups, and spin-outs.

4.12 In 2012-13, Russell Group universities accounted for:

- The majority of IP income to the HE sector from SMEs (61%) and the majority of contract research with SMEs (55%).
- Eight of the top ten UK universities by value of contract research with SMEs.

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<sup>16</sup> 'Knowledge Exchange Performance and the Impact of HEIF in the English Higher Education Sector: Report for HEFCE' (April 2014).

<sup>17</sup> Ibid. The report classifies the most research-intensive universities as Oxford, Imperial, UCL, Cambridge, Manchester and KCL. All other Russell Group universities in England (as the report does not cover the devolved nations) are classified as high research-intensive institutions.

<sup>18</sup> 'British Invention, Global Impact: The Government's Response to Sir Andrew Witty's Review of Universities and Growth' (March 2014)

- They provided £42 million worth of consultancy, equipment and facilities services and continued professional development to SMEs.<sup>19</sup>

4.13 **However, there is a danger that amending the allocation of HEIF in the manner recommended by Sir Andrew Witty could serve to skew knowledge exchange interactions too much towards purely SME-university collaboration. This would ignore the importance of engaging with larger companies with greater capacity to drive regional and national economic growth. Enabling universities to engage with SMEs through the supply and value chains of large businesses should be a key consideration.**

#### *Institutional Impact Acceleration Accounts*

4.14 We welcome moves by most of the Research Councils to develop Institutional Impact Acceleration Accounts (IAAs) that provide funding for knowledge exchange activities based on recent research funding history. This funding is complementary to HEIF and universities have substantial autonomy in how these funds are used. In particular research-intensive universities are using IAA funding for proof of concept work, frequently with SMEs. **On-going support for IAAs should be given a high priority.**

#### *Catapults*

4.15 The Catapult Centres are now a major focus of activity for the TSB, with over £1 billion of public and private sector investment into the Catapults expected over the next 5 years.

4.16 A number of our world-class universities actively engage in the Catapult Centres.<sup>20</sup> Indeed, when they were first proposed, the Russell Group stressed that the benefits of such centres would be maximised only if they were closely linked to existing centres of excellence in research-intensive universities, and built on existing innovation networks associated with such universities.

4.17 The High-Value Manufacturing Catapult, which was developed principally out of existing academic centres of excellence in proximity to industrial critical mass, has been one of the most successful Catapults in terms of impact. The HVM Catapult has worked with over 1,500 businesses since its inception in 2011, the vast majority of which are SMEs, to close the gap between early innovation and full-scale production. Many of the seven HVM Catapult Centres are now expanding their offer to respond to industry demand.

4.18 However, it is not clear how universities are being engaged in development of the new and prospective Catapult centres. The new Transport Systems Catapult, for example, is not directly linked to a leading university and we still do not know if/how it will seek to build those links in future. We are concerned that the impact of the Catapults will be diluted if the link with excellent research in universities is not strong. It is worth noting

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<sup>19</sup> HE-BCI data 2012-13

<sup>20</sup> The Universities of Sheffield, Manchester, Birmingham, Nottingham, Bristol and Warwick are partners in the High Value Manufacturing Catapult. The Cell Therapy Catapult has an academic partnership with Newcastle. The Offshore Renewable Energy Catapult engages with academia through a Research Advisory Group, which includes representatives from 10 universities, including: Imperial, Sheffield, Edinburgh, Oxford, Exeter, and Queen's University, Belfast. Durham University and the University of Nottingham are partners in the Satellite Applications Catapult Centre of Excellence.



that participation of scientists and researchers in governing and setting the policy of the Fraunhofer Institutes is written into its statute and that Directors of the Institutes are university Chairs.<sup>21</sup>

- 4.19 **Research excellence must be at the heart of the Catapults. They should be engaged directly with the UK's excellent research-intensive universities, enabling them to build on areas of existing strength and comparative advantage. We are concerned that the value of Catapults will be undermined if engagement with the research base and academic networks within our world-leading universities is not at the core of their remit.**

*Knowledge Transfer Partnerships (KTPs)*

- 4.20 Knowledge Transfer Partnerships (KTPs) which typically engage SMEs with expertise in universities are a valuable mechanism for knowledge transfer.
- 4.21 Russell Group universities are undertaking KTPs with a wide range of organisations across sectors including pharmaceutical, aerospace, construction, engineering, IT, telecoms, utility, and healthcare, with partners ranging from SMEs to large companies as well as local authorities and the NHS.
- 4.22 **In order to improve the uptake of KTPs, local enterprise partnerships (LEPs) could be major contributors to KTP funding, raising awareness with the SME community in particular, and helping to boost the number of partnerships supported each year in their regions.**
- 4.23 Reintroducing shorter-period KTPs and reducing the bureaucracy in setting up KTP arrangements would also help make them more attractive to SMEs.

*University Enterprise Zones*

- 4.24 Last year, the Government announced that £15 million in capital funding will be made available over three years for a University Enterprise Zone (UEZ) pilot.
- 4.25 While this is potentially a very welcome initiative, we are concerned the money will be spread too thinly to have a significant impact for business-university collaboration, even across the 3-4 projects BIS intends to fund initially. To be effective, UEZs need to create demand from innovative SMEs: the draw of easier access to knowledge, skills and facilities at research-intensive universities is strong, but UEZs also have to appeal to the immediate commercial pressures faced by business. As currently framed, the UEZs lack many of the incentives of established Enterprise Zones, in particular, business rate discounts and support for superfast broadband - benefits SMEs often seek when considering where to locate.
- 4.26 Furthermore, although eight areas have been chosen to bid for the 3-4 pilots, **we would like to see opportunities for world-class research-intensive universities in all areas of the UK to engage in the UEZ initiative in future.** Our world-class universities are anchors for growth in their regions and should be considered as strategic assets for the UK around which future business growth can be catalysed.

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<sup>21</sup> See: <http://www.fraunhofer.de/en.html>

## Research Partnership Investment Fund (RPIF)

- 4.27 The success of the RPIF has demonstrated that our universities are ready to do business with public and private partners and that those partners also see great benefit in such collaborations.<sup>22</sup>
- 4.28 RPIF has undoubtedly been very useful in securing outside investments, but **a more strategic approach to RPIF could be achieved with a longer-term and more flexible initiative** having either an open-ended time period for putting forward proposals, or at least a clear set of proposal closing dates known well in advance.
- 4.29 A longer-term perspective would also fit with business planning cycles. Businesses typically look five or more years ahead in making major capital investments so the longer lead-time universities have to talk to business about potential investments, the better quality of bids that can be put forward, the wider universities will be able to look for partners, and the more likely that they will be of strategic importance.
- 4.30 Business investment in research and innovation is globally mobile and the UK needs to do whatever it can to attract investment here against very strong international competition. If we can attract the really important strategic investments through future rounds of RPIF then other activities will follow.

## 5. Increasing the weighting of the 'impact' criteria in any future REF assessment before the REF 2014 results are known could be damaging for the HE sector

- 5.1 We recognise the importance of demonstrating the impact research conducted by our world-class universities has on the UK's economic prosperity and quality of life<sup>23</sup>, but we do not advocate increasing the weighting of the 'impact' criteria in any future REF from the current 20% to 25%, as recommended by Sir Andrew Witty, before the results of REF 2014 are available. To increase the weighting of 'impact' when such assessment is still at a developmental stage, and hasn't been properly scrutinised, risks undermining the credibility of the REF for any future round of assessment.
- 5.2 Furthermore, such a move runs the risk of exacerbating pressure on researchers and institutions to ensure 'impact' can be demonstrated within the assessment timeframe, creating the risk of driving behaviours which reinforce the *status quo* and stifle the growth of new research groups and partnerships.
- 5.3 Increasing the weighting of impact could also introduce a bias towards applied research away from basic research, which would be damaging to the UK's research community in the long-term. As outlined above, long-term curiosity driven research often leads to important breakthroughs, driving technology development, medical advances and other economic, social and cultural benefits.
- 5.4 **Assessment of 'impact' must be explicitly linked to research activity and research excellence. Increasing the weighting of the impact criteria in any future REF could create perverse incentives which discourage fundamental research of a novel and high-risk nature which pays economic and social dividends over the**

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<sup>22</sup> <http://www.hefce.ac.uk/whatwedo/rsrch/howfundr/ukresearchpartnershipinvestmentfund20122015/>

<sup>23</sup> See footnote 6

**long-term. Any changes that may be made to the research assessment process in future must have the full confidence of the HE sector and other stakeholders.**

## **6. Regional structures must support universities and businesses in delivering sustainable growth**

- 6.1 The participation of our world-class universities in setting regional strategic priorities with LEPs is accelerating the pace of regional economic growth.<sup>24</sup>
- 6.2 However, we are concerned the large number and relatively small scale of LEPs, coupled with the fact that the model is untested, could act as a disincentive for businesses to engage – in particular, multinationals seeking a UK solution to help them compete internationally.
- 6.3 It can also be difficult for our universities to engage when dealing with a number of LEPs in their immediate vicinity that do not act in a coordinated way. There is a danger LEPs will each pursue separate growth strategies which may be sub-optimal.
- 6.4 LEP focus on research, development and innovation (and engagement with HEIs) is very variable and it is not clear that every LEP understands the value of engaging with leading research-intensive universities as significant drivers of economic growth in their own right. With the substantial investment the Government has already made in our universities, LEPs should see them as anchors for future growth and should work with them to ensure this can be realised even more effectively.
- 6.5 Collaborations across LEPs and internationally are essential to create critical mass effects. In particular this is important when engaging with larger companies and their supply/value chains that often operate in a number of UK and international locations. Their training, R&D and innovation needs are likely to be decided nationally or internationally and LEPs need to engage at that level if they are to deliver impact locally. In many cases, Russell Group universities can act as a gateway to that wider business network.
- 6.6 Of the £5.3 billion of European Structural & Investment (ESI) funds to the UK for the period 2014-2020, around £660 million will be directed towards supporting innovation. We recommend that LEPs should use ESI funding to support business-university collaboration – building on existing centres of excellence, enabling universities to scale-up investments in knowledge transfer, commercialisation and development activities and to develop research capital for solving business challenges.
- 6.7 **It is imperative universities sit at the core of regional growth strategies along with businesses, enabling world-leading research to be harnessed and brought to commercialisation. In order to deliver significant regional economic growth, LEPs must focus investment on existing centres of excellence at the UK's world-class universities, enabling current knowledge transfer, commercialisation and development activities to be scaled up.**

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<sup>24</sup> Many Russell Group Vice-Chancellors sit on LEP Boards and are advising LEPs on their strategies for the knowledge economy. Some of our universities have been instrumental in securing funding from central government in order to facilitate regional job creation and inward investment.

## **Annex A – some examples of how Russell Group universities are contributing to and driving economic growth**

Long-term curiosity-driven research which has paid off:

- NaturalMotion, an Oxford-based mobile gaming company, formed as a spin-out to commercialise fundamental blue-skies research into the control of body movement at the University of Oxford was recently sold for £500 million. Oxford's technology transfer arm - Isis Innovations – provided initial investment of £25,000 seed funding and worked with the company to develop prototypes for investors.
- Spirogen, a biotechnology company spun-out of UCL by UCL Business in 2001 developed novel small molecule warheads for use in Antibody-Drug Conjugate therapeutics for the treatment of cancer. Following very promising development work, the company was sold to AstraZeneca's MedImmune unit in 2013 for an initial \$200 million, with a payment of a further \$200 million should Spirogen meet development targets.

Russell Group universities acting as hubs and attracting foreign direct investment:

- The University of Warwick, through its links with Jaguar Land Rover in particular, is the centre of significant UK activity in advanced automotive research and manufacturing. TATA and JLR investment with the university has created a £92 million National Automotive Innovation Campus, which is now also attracting inward investment from JLR's supply chain partners, including the powertrain division of Germany's ZF.
- The Cambridge technology cluster is host to Europe's largest concentration of high-technology firms, particularly life science and IT companies. It is a magnet for international enterprise attracting companies who want proximity to world-leading knowledge: Microsoft established its European research centre at the University of Cambridge. Similarly, Pfizer and AstraZeneca have recently announced significant investments in research facilities in the Cambridge area.
- The University of Manchester's biomedical cluster now numbers 200 companies and boasts collaborations with global companies such as AstraZeneca, Aventis Pharma, Eli Lilly, GSK and Pfizer.

Contract and collaborative research with business:

- Marine engineering multinational Lloyd's Register is moving its entire global research headquarters to the University of Southampton's campus, bringing 400 of their engineers together with those of Southampton in a new £140 million development. This is already acting as a hub for the marine industry across the UK, and attracting inward investment from overseas.
- The GlaxoSmithKline-sponsored clinical imaging centre at Imperial has created a world-leading facility with state of the art scanning and imaging facilities. GSK initially committed to a £50 million investment in the centre, alongside parallel investment from Imperial and the MRC. The centre will create a platform for the development of new, more effective, treatment and prevention of diseases.
- Rolls-Royce and the University of Birmingham are developing a £60 million world-leading research centre for high temperature metallurgy and associated processes

for components including turbine blades (a Research Partnership Investment Fund project). This will ensure a more effective translation of fundamental research to production and train engineers from apprenticeships to postdoctoral fellows. Focused initially on the key manufacturing areas of investment, the centre will draw in additional research competencies through wider industry and academic involvement.

- The Centre for Additive Layer Manufacturing at the University of Exeter is an initiative set up by EADS and Rolls Royce with the university to introduce the concept of additive manufacturing (3D printing) to the SME manufacturing base in the South West. The Centre purchased new equipment and facilities and is committed to engaging with 250 SMEs in the region through advice, training and demonstrations.
- The University of Sheffield's Advanced Manufacturing Research Centre with Boeing is a world-class centre for advanced machining and materials research for aerospace and other high-value manufacturing sectors. Over 60 industrial partners are involved, including Boeing and many smaller companies in the aerospace supply chain. It forms part of the Catapult Centre in High Value Manufacturing. A business park development on the back of this activity is now being planned in order to meet increased industry demand, with its first development 'Factory 2050' expected to contribute £6.4 million to the local economy and create 162 jobs.
- Durham University has been highlighted as a global exemplar in its relationship with consumer goods giant Procter and Gamble (P&G). With over 40 collaborative projects and 200 academic and industrial researchers in active dialogue, P&G has presented Durham as a global leader in multidisciplinary research to the US Congress. P&G described UK universities as 'more competitive, more aggressive and more forward thinking' than their US counterparts and specifically named Durham as the exemplar for industrial engagement.

#### Knowledge Transfer Partnerships (KTPs):

- A KTP project between Newcastle University, Nottingham University NHS Trust and JRI Orthopaedics Ltd, an SME based in Sheffield, enabled the development of technology, the VAIOS® shoulder system. The shoulder system made £500,000 of sales in 18 months and currently accounts for 6%, and rising, of the 1,250 reverse shoulder prostheses sold in the UK annually.
- A KTP Project between the University of Glasgow and Compound Semiconductor Technology Global (CSTG), an SME based in Glasgow, has enabled the commercialisation of Quantum Cascade Lasers (QCL) and the associated novel fabrication processes developed at the University of Glasgow. This resulted in 40% turnover growth from 2010-2012 and the company is now recognised as a global leader in QCLs and their fabrication. Based on University of Glasgow research, the company has created a manufacturing toolbox for the production of a wide variety of QCL chip designs.
- Queen's University, Belfast is currently the UK's leading university for KTPs, with 31 partnerships ongoing across the University, more than any other UK institution. A KTP project between Queen's and Bullivant Taranto Ltd was named the UK's Best KTP at the 2013 national KTP Awards. The partnership aims to reduce energy costs and environmental impact in the manufacture of pre-cast concrete.

#### Business incubation:

- SETSquared is a collaboration between the Russell Group universities of Bristol, Exeter and Southampton and partner universities of Bath and Surrey, that aims to accelerate the growth of innovation and technology businesses to stimulate economic growth in the regional economy. The partnership has a track record of supporting early-stage companies through access to industry specialists, investors and experienced entrepreneurs, and provides opportunities for industry to access academic ideas with commercial potential and develop collaborative research relationships. It has raised over £1 billion in 10 years and has been voted Europe's number one University Business Incubator.
- IDEALondon, is a collaborative project based in London's Tech City and launched by the Prime Minister in 2013. It is a unique partnership between UCL, Cisco and DC Thompson to support the growth of rapidly expanding digital, tech and media start-ups in and around east London. The partnership provides bespoke support, tailored to individual start-ups, with mentoring and a strategic acceleration programme. It will initially house around fifteen companies and around one hundred entrepreneurs and staff. It provides a new model of working between universities, large and medium size organisations for the benefit of small business development.
- The Entrepreneur Centre at Saïd Business School, University of Oxford, runs a variety of programmes which incentivise, support and accelerate the formation of high growth ventures ranging from mentoring and guidance to venture and seed funds. The School has two student-led funds which offer financial support to start and scale ventures. The Centre also manages Oxford Entrepreneurs, the largest student entrepreneurship society in Europe with over 4,500 members which to date has generated 30 start-up companies, and liaises closely with Isis Innovation, Oxford University's technology transfer company responsible for commercialising research generated by its faculty members and researchers. It has been involved in the Goldman Sachs *10,000 Small Businesses UK* initiative since its launch in 2010, supporting the collaborative development and delivery of the curriculum.

#### Strategic engagement with LEPs and City Regions:

- The University of Liverpool is leading the development of the knowledge economy in the Liverpool City Region, engaging with a range of external partners and communities. The Vice-Chancellor is a member of the LEP for the City Region, and also chairs the Knowledge Economy Group, involving public and private sector leaders and representatives from BIS and the STFC.
- The University of Birmingham and Birmingham Children's Hospital have secured matched government funding, as part of the Birmingham City Deal, to build the £24 million Institute of Translational Medicine. The co-location of major clinical specialties with a clinical research facility, early-phase trial unit and hub to host pharmaceutical companies and SMEs will create a globally unique translational medicine centre capable of driving regional job creation and inward investment.